Claims

1. A process for cleaning parts comprising:

connecting a vacuum source to a port in a first pulse generator housing;

connecting a source of pressurized air to another port in said housing;

alternately connecting said vacuum part or said pressurized air port in rapid succession to an outlet port;

connecting an outlet fluid passage to said outlet port to create a reversing air flow therein; and

outlet port to a fluid passage directing outflow therefrom at a part to be cleaned whereby a rapidly reversing high velocity air flow pulses are utilized to clean said part.

2. A process according to claim 1 including enclosing said part in tooling formed with one or more passages connected to said fluid passage to receive said reversing pressurized air flow pulses and apply the same to a part in said tooling.

3. A process according to claim 2 wherein said reverse air flow pulses are used to evacuate debris removed from said part.

4. A process according to claim 1 including connecting a source of pressurized liquid cleaning fluid to a port in a second generator air and alternately connecting each of said ports to an outlet port;

connecting said outlet port to a fluid passage and directing outflow therefrom at a

part to be cleaned whereby said fluid is expelled under pressure exerted by said pressurized air at said port.

5. A process according to claim 1 wherein said vacuum port and pressurized air port are alternately connected to said outlet port by rotating a valve member in said first generator housing.

6. A process according to claim 4 wherein said cleaning fluid and pressurized air ports are alternately connected to said outlet port by rotating a valve member in said housing.

7. A process according to claim 1 further including connecting a plurality of parts to said vacuum source and a plurality of parts to said source of pressurized air and an outlet associated with sets of vacuum source and air pressure ports to alternately create pulses of vacuum and pressurized air, and connecting each outlet to fluid passage to direct said pulses at a different region of said part.

8. An apparatus for cleaning a part comprising

a first pulse generator housing;

a vacuum source connected to an inlet port in said housing;

a pressurized air source connected to another inlet port in said housing;

an outlet port in said housing;

valving operated to alternately connect each one of said parts to said outlet to

create reversing pulses of air flow;

a flow passage connected to said outlet and to tooling receiving a part to be cleaned to thereby expose said part to said reversing pulses of air flow to clean the same.

9. An apparatus according to claim 8 wherein said tooling encloses said part and has a passage connected extending to a limited area of said port.

10. An apparatus according to claim 8 further including a source of liquid cleaning fluid under pressure;

a second pulse generator housing having an inlet port connected to said cleaning fluid source;

another inlet port connected to said source of pressurized air;

an outlet port;

valving causing alternate connection of said outlet port to said cleaning fluid and pressurized air ports;

a cleaning fluid passage extending to said tooling, said tooling having a passage connected thereto to direct outflow of said cleaning fluid passage at a part therein.

11. An apparatus according to claim 8 further including a debris separator receiving reverse air flow pulses carrying debris sucked out of said tooling.

12. An apparatus according to claim 8 wherein said valving includes a

member rotated to alternately connect said outlet to said inlet ports.

13. An apparatus according to claim 10 wherein said valving includes a member rotated to alternately connect said outlet to said inlet ports.

14. An apparatus according to claim 8 further including a plurality of inlet ports connected to said vacuum source and a plurality of other inlet ports connected to said source of pressurized air, and a plurality of outlet ports each associated with a respective set of vacuum and air ports and said valving alternately connects respect inlets in each set to an associated outlet part, and a plurality of outlet passages extending to said tooling which has a passage for each outlet passage extending to a different area of said part.